

**REMARKS**

Claims 1-28 are in the application, of which Claims 1, 8, 15, and 27 are the independent claims. Claims 1, 2, 4, 8, 11, 15, 17, 27, and 28 are amended herein. Reconsideration and further examination are respectfully requested.

Initially, Applicants thank the Examiner for the thoughtful courtesies extended during the telephonic interview held on November 7, 2007. During the interview, Applicants' representative discussed the claim amendments, and Applicants thank the Examiner for an indication that the amendments would likely overcome the rejections.

No new matter is believed to have been introduced to the application by this amendment. The changes to the claims are fully supported by the disclosure, including, for example, the title and the paragraphs [0010], [0015], [0038], [0040], [0044], [0059], and [0064].

In the Office Action, Claims 1, 3-5, 7-9, 10-12, 14-15, 17-18, 21-25 and 27-28 were rejected under 35 U.S.C. § 102(e) by U.S. Patent Appl. Pub. No. 2003/0014212 (Ralston); and Claims 2, 6, 9, 13, 16, 19, 20 and 26 were rejected under 35 U.S.C. § 103(a) over Ralston in view of Virtual Object Manipulation on a Table-Top AR Environment (Kato). Reconsideration and withdrawal of these rejections are respectfully requested.

The present invention generally concerns augmented reality for space-based phenomena. With reference to particular claim language, independent Claim 1 is directed to a visualization system for developing a space system. The visualization system comprises a positioning portion, a modeling portion, a model specification portion, and an output portion. The positioning portion is configured to determine a position of a viewer with respect to a real world and a position of the viewer with respect to a virtual world. The positioning portion is configured to allow the viewer to interact with the virtual world.

The modeling portion is configured to specify the virtual world in response to a space system model of the virtual world. The model specification portion is configured to specify a representation of satellite model status data in response to the position of the viewer with respect to the virtual world and in response to satellite model status data. The output portion is configured to provide an image of the virtual world super-imposed on an image of the real world and is configured to allow the viewer to develop a space system. The image of the virtual world includes the representation of the satellite model status data to the viewer in response to the position of the viewer with respect to the virtual world.

The representation of the satellite model status data comprises a representation selected from the group: satellite orbit, ground coverage of a satellite, satellite sensor orientation, satellite sensor position, a satellite's orientation vectors to other satellites or objects, a satellite's coverage analysis when the satellite is in a view of a region, satellite revisit time, a satellite communication link or network, beam strength of space, satellite systems status, and satellite system design data.

Independent Claim 8 is directed to a method for visualization of augmented reality to develop a space system. The method comprises determining a position of a viewer with respect to a real world and a position of the viewer with respect to a virtual world, determining a space system model of the virtual world, and determining a representation of satellite model status data in response to the position of the viewer with respect to the virtual world and in response to satellite model status data.

The method further comprises displaying to the viewer a representation of the virtual world super-imposed on a representation of the real world, and developing a space system. The representation of the virtual world includes the representation of the satellite model status data in response to the position of the viewer with respect to the virtual world.

The representation of the satellite model status data comprises a representation selected from the group: satellite orbit, ground coverage of a satellite, satellite sensor orientation, satellite sensor position, a satellite's orientation vectors to other satellites or objects, a satellite's coverage analysis when the satellite is in a view of a region, satellite revisit time, a satellite communication link or network, beam strength of space, satellite systems status, and satellite system design data.

Independent Claim 15 is directed to a visualization method for developing a space system. The method comprises displaying to a viewer a representation of a real world overlaid with a representation of a virtual world. The representation of the virtual world includes a representation of satellite model status data. The method further comprises selecting a satellite, by the viewer, to view satellite model status data of the satellite, and directing the satellite, by the viewer, to move to a different position.

The representation of the virtual world is determined in response to a space system model of the virtual world, and in response to a position of the viewer with respect to the virtual world. The representation of the satellite model status data is determined in response to satellite model status data, and in response to a position of the viewer with respect to the virtual world. Furthermore, viewer is allowed to interact with the virtual world.

Independent Claim 27 is directed to a visualization system for developing a space system. The system comprises a positioning portion, a modeling portion, a model specification portion, an input portion, and an output portion. The positioning portion is configured to determine a position of a viewer with respect a real world and a position of the viewer with respect to a virtual world. The positioning portion is configured to allow the viewer to interact with the virtual world. The modeling portion is configured to specify the virtual world in response to a space system model of the virtual world. The model specification portion is configured to specify a representation of

satellite model status data in response to the position of the viewer with respect to the virtual world and in response to satellite model status data.

The input portion is configured to allow the viewer to select a satellite to view satellite model status data of the satellite and is configured to allow the viewer to direct the satellite to move to a different position. The output portion is configured to provide an image of the virtual world super-imposed on an image of the real world and is configured to allow the viewer to develop a space system. The image of the virtual world includes the representation of the satellite model status data to the viewer in response to the position of the viewer with respect to the virtual world.

The applied references are not understood to disclose or suggest the features of independent Claims 1, 8, 15 and 27, particularly with respect to at least the following features:

a visualization system or method for developing a space system utilizing a space system model of the virtual world and a representation of satellite model status data, where the representation of the satellite model status data comprises a representation selected from the group: satellite orbit, ground coverage of a satellite, satellite sensor orientation, satellite sensor position, a satellite's orientation vectors to other satellites or objects, a satellite's coverage analysis when the satellite is in a view of a region, satellite revisit time, a satellite communication link or network, beam strength of space, satellite systems status, and satellite system design data, as recited in Claim 1 or 8; and

a visualization system or method for developing a space system utilizing a representation of satellite model status data, where the viewer can select a satellite to view its satellite model status data and direct the satellite to move to a different position, as recited in Claim 15 or 27.

Turning to the applied references, Ralston is directed to an augmented vision system for a survey operation. Ralston discloses that in real time techniques, an actual position is determined and recorded at each point during a survey. Five satellites are required for initialization. See Ralston, paragraph [0004]. The satellite positions are monitored closely from earth and act as reference points, from which an antenna receiver in the field is able to determine position information. By measuring the travel time of signals transmitted from a number of satellites, the receiver is able to determine corresponding distances from the satellites to the antenna phase center, and then the position of the antenna by trilateration. See Ralston, paragraph [0005]. Ralston can display satellites to assist the operator. See Ralston, FIG. 25 and paragraphs [0090] and [0091].

Ralston, however, does not disclose or suggest a visualization system or method for developing a space system utilizing a space system model of the virtual world and a representation of satellite model status data, where the representation of the satellite model status data comprises a representation selected from the group: satellite orbit, ground coverage of a satellite, satellite sensor orientation, satellite sensor position, a satellite's orientation vectors to other satellites or objects, a satellite's coverage analysis when the satellite is in a view of a region, satellite revisit time, a satellite communication link or network, beam strength of space, satellite systems status, and satellite system design data.

Furthermore, Ralston does not disclose or suggest a visualization system or method for developing a space system utilizing a representation of satellite model status data, where a viewer can select a satellite to view its satellite model status data and direct the satellite to move to a different position.

Kato does not remedy the foregoing deficiencies of Ralston. Kato discloses playing cards utilizing augmented reality. See Kato, section 3. Like Ralston, Kato, fails to disclose or suggest the claimed features of the invention.

Accordingly, the applied references, either alone or in combination, are not understood to disclose, teach, or suggest the features of independent Claims 1, 8, 15 and 27, which are believed to be in condition for allowance.

The other claims currently under consideration in the application are dependent from independent Claim 1, 8, 15 or 27 discussed above and therefore are believed to be allowable over the applied references for at least the same reasons. Because each dependent claim is deemed to define an additional aspect of the invention, the individual consideration of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, the entire application is believed to be in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience. Applicants' undersigned attorney may be contacted at the address and telephone number set forth below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including

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extension of time fees, to Deposit Account 502203 and please credit any excess fees to such deposit account.

Respectfully submitted,

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